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THURSDAY, NOVEMBER 10, 1977

PART IV

DEPARTMENT OF TRANSPORTATION

Coast Guard

■

COMMERCIAL DIVING

Proposed Rule

[4910-14]

DEPARTMENT OF TRANSPORTATION

Coast Guard

[46 CFR Parts 54 and 197]

[CGD 76-009]

COMMERCIAL DIVING REGULATION

AGENCY: Coast Guard, DOT.

ACTION: Proposed rule.

SUMMARY: The Coast Guard is proposing to issue regulations governing commercial diving operations from vessels and facilities including certificated vessels, deepwater ports, mobile offshore drilling units, artificial islands, and other fixed structures subject to Coast Guard jurisdiction. Commercial diving exposes individual divers to many hazardous situations that can and have caused marine casualties. These regulations prescribe safety and health standards for commercial diving operations.

DATES: Comments must be received on or before December 27, 1977.

ADDRESSES: Comments should be submitted to Commandant (G-CMC/81) (CGD 76-009), U.S. Coast Guard, Washington, D.C. 20590. Comments will be available for examination at the Marine Safety Council (G-CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street SW., Washington, D.C. 20590.

FOR FURTHER INFORMATION:

Captain George K. Greiner, Marine Safety Council (G-CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street SW., Washington, D.C. 20590, 202-426-1477.

SUPPLEMENTARY INFORMATION: Interested persons are invited to participate in this proposed rulemaking by submitting written views, data, or arguments. Each person submitting a comment should include his name and address, identify this notice (CGD 76-009) and the specific section of the proposal to which his comment applies, and give the reasons for his comment. All comments received during the comment period will be considered before final action is taken on this proposal. No public hearing is planned but one may be held at a time and place to be set in a later notice in the FEDERAL REGISTER if such is requested in writing by an interested person desiring to comment orally at a public hearing who raises a genuine issue not brought up during the joint Coast Guard/OSHA public hearing held during December 1976 and January 1977 in New Orleans, La.

DRAFTING INFORMATION

The principal persons involved in drafting this proposal are: Commander Peter T. Muth, Project Manager, Office of Merchant Marine Safety and Lieutenant William R. Kerivan, Project Attorney, Office of the Chief Counsel.

DISCUSSION OF THE PROPOSED REGULATIONS

GENERAL DISCUSSION

Approximately thirty years ago, the Coast Guard established its own internal diving program and has actively maintained an interest in diving and the diving communities. The Coast Guard participates in national standard setting activities, and national and international diving symposiums; maintains active contacts with the military, commercial, and sport and recreational diving communities; and receives and analyzes diver death and accident reports from commercial vessels and facilities under Coast Guard jurisdiction. Additionally, the Coast Guard monitors sport and recreational diving activities and has jointly funded with the National Oceanic and Atmospheric Administration the compilation of statistics and analysis of sport and recreational diver deaths and accidents. The Coast Guard also renders assistance to divers through our Rescue Coordination Centers when requested. Since 1968, the Coast Guard has actively participated and sought the development of consensus standards for the civilian diving community.

The Coast Guard published an Advance Notice of Proposed Rulemaking (ANPRM) on August 11, 1975 (40 FR 33681) proposing to amend Chapter I of Title 46 of the Code of Federal Regulations (CFR) by adding a new subchapter prescribing marine occupational safety and health standards for vessels and facilities that are under Coast Guard jurisdiction. This ANPRM proposed to regulate all working conditions and work places under Coast Guard jurisdiction if they are determined to be hazardous to employees, and if the Coast Guard determines that the hazards encountered can be reduced or eliminated by the promulgation of effective regulations. This new subchapter would consist of all existing marine occupational safety regulations and all additional occupational safety and health standards covering the work places and work conditions prescribed by the Coast Guard.

The Occupational Safety and Health Administration (OSHA), Department of Labor, published in the FEDERAL REGISTER on October 22, 1975 (40 FR 49123) an announcement that they would hold an informal fact-finding hearing on commercial diving operations. The Coast Guard participated in this informal hearing that was conducted in Washington, D.C., on November 11 through 14, 1975.

On June 15, 1976, OSHA published in the FEDERAL REGISTER (41 FR 24272) a six-month Emergency Temporary Standard (ETS) for commercial diving. A Memorandum of Understanding (MOU), covering the relationship between OSHA and the Coast Guard during the period of the ETS and also during the period of development of final Coast Guard regulations for commercial diving was signed on June 9, 1976, by the Commandant of the Coast Guard and the Assistant Secretary of Labor for Occupational Safety and Health. The text of the MOU was published with the ETS (41 FR 24291). The ETS was withdrawn by OSHA on November 5, 1976 (41 FR 48969).

On July 15, 1976 the Coast Guard published an ANPRM in the FEDERAL REGISTER (41 FR 29151) stating it was considering new regulations prescribing occupational safety and health standards for commercial diving. The Coast Guard invited specific public advice and recommendations on nine enumerated areas and any general comments to assist the Coast Guard in developing new occupational safety and health regulations for commercial diving in areas of Coast Guard jurisdiction.

In August 1976, the OSHA Advisory Committee on Construction Safety and Health met to discuss materials and information relating to the occupational safety and health aspects of commercial diving operations and to make recommendations to OSHA. The Coast Guard participated in this public proceeding.

On November 5, 1976 OSHA published a notice of proposed rulemaking and notice of public hearings in the FEDERAL REGISTER (41 FR 48950), with corrections on November 12, 1976 (41 FR 50008), covering commercial diving operations. Pursuant to the MOU between the Coast Guard and OSHA, the Coast Guard published a notice in the FEDERAL REGISTER (41 FR 48969) joining OSHA in the public hearings, scheduled for December 16 through 17, 1976 in New Orleans, to receive public comments for the Coast Guard on the substance of the OSHA proposed standards. During the joint public hearings (December 16 through 21, 1976 and January 10 through 14, 1977) the Coast Guard gave the public an opportunity to comment on Coast Guard regulatory concepts that would be substantively similar to the OSHA proposed standards for commercial diving operations.

On July 22, 1977 OSHA published in the FEDERAL REGISTER (42 FR 37650) their final commercial diving standard. Under section 4(b)(1) of the Occupational Safety and Health Act of 1970, the OSHA standards do not apply to those diving operations over which the Coast Guard exercises its statutory authority to prescribe or enforce standards or regulations affecting occupational safety and health.

In the development of this proposal, the Coast Guard has also met at various times beginning in 1975 with members of the National Offshore Operations Industry Advisory Committee (NOOIAC). NOOIAC submitted its recommendations to the Coast Guard on June 15, 1977. These recommendations, along with the comments received as a result of our ANPRM's and joint OSHA/CG rulemaking activities, were taken into consideration for the purpose of this proposal.

Pursuant to the MOU this proposed regulation is considered to be substantively similar to the final OSHA commercial diving standard.

DISCUSSION OF SPECIFIC PROPOSALS

The proposed regulations are generally self-explanatory. Subchapter V is based, as was stated in the Coast Guard ANPRM of August 11, 1975, on the need for putting in one place all occupational safety and health standards for maritime operations under Coast Guard jurisdiction. Subpart B of Subchapter V, Commercial Diving Operations, is a new proposed regulation and not a consolidation of existing personnel safety and health regulations.

These proposed regulations apply to commercial diving operations conducted from certain vessels and facilities including deepwater ports, mobile offshore drilling units, artificial islands, and fixed structures subject to Coast Guard jurisdiction except these regulations do not apply to commercial diving operations performed solely for marine scientific research and development purposes performed by educational institutions, to research and development for the advancement of diving equipment and technology, or to commercial diving operations performed solely for search and rescue or related public safety purposes by or under the control of a governmental agency.

This proposal does not address the qualifications of individual dive team members including the medical requirements. It is the intent of the Coast Guard to regulate commercial diving operations on vessels and facilities subject to the jurisdiction of the Coast Guard to the extent necessary to ensure an acceptable level of personnel safety and health. Because of the developing state-of-the-art of diving, the lack of agreement among divers or physicians or employers of divers on the minimum physical and mental health standards for divers, the equal lack of agreement on the minimum diver qualification requirements, and the lack of substantial evidence in the joint Coast Guard/OSHA public hearing record linking increased diver qualifications to a reduction in diving fatalities and accidents, the Coast Guard does not intend at this time to issue regulations in these areas. The Coast Guard may issue regulations in these areas as the state-of-the-art of hyperbaric medicine and of diving progresses.

The proposed standard is separated into two main areas: equipment and operations. These are further divided into equipment specifications and requirements; diving operations general; specific diving procedures; periodic tests and inspections; and records, record keeping, and casualty reporting.

The proposed regulations allow the Coast Guard to accept substitutes for equipment, materials, apparatus, arrangements, procedures, or tests required by this subpart if the substitute provides an equivalent level of safety.

The equipment specifications and equipment requirements apply to each vessel or facility conducting commercial diving operations. Nothing in this subpart amends or supersedes the requirements for the design, plan approval, construction, certification and inspection required of these vessels or facilities having installed diving systems, contained in other parts of Title 46 CFR.

A SCUBA diver is limited in the amount of work he can do because of the following equipment restrictions: A limited breathing supply, lack of voice communications with surface support personnel, and lack of monitoring or control abilities on the part of surface support personnel. It is therefore considered appropriate to establish limiting standards based on these factors. It is proposed to limit commercial SCUBA diving to a maximum depth of 130 feet of seawater (fsw) and to diving within the air no-decompression limits. Additionally, it is proposed to restrict SCUBA diving when diving against currents and when the diver can not ascend directly to the surface. Examples are diving through ice, inside wrecks and into outfalls.

Comment received on the Coast Guard's ANPRM concerning commercial diving as well as testimony received during the joint CG/OSHA rulemaking procedures is voluminous and often conflicting with regard to when a decompression (recompression) capability must be at the dive location. The Coast Guard recognizes the vast majority of inland and harbor commercial diving occurs at depths less than 130 fsw, deep-sea commercial diving presently can achieve depths of 1,500 fsw, and technology has advanced to enable dives approaching 2,000 fsw. The Coast Guard also recognizes decompression facilities involve significant capital outlays for materials, maintenance, and personnel, and that the overwhelming majority of air diving within the no-decompression limits does not require decompression equipment. Although the Coast Guard is aware that the U.S. Navy requires a decompression facility at the dive location for air dives deeper than 170 fsw, the Coast Guard proposes requiring a decompression chamber at the dive location for air dives deeper than 130 fsw or outside of the air no-decompression limits, and for mixed gas diving.

Recognizing air diving outside the no-decompression limits, mixed-gas diving, and diving deeper than 130 fsw is potentially more hazardous, additional safety precautions, such as requiring a stand-by diver, individual surface tending, more detailed record keeping, and decompression facilities at the dive location, are proposed.

ECONOMIC SUMMARY

This proposed rule has been reviewed for economic effect under Department of Transportation "Policies to Improve Analysis and Review of Regulations" (41 FR 16200). The analysis considered the economic effect on both government and industries. In evaluating the effect on industry, the Coast Guard relied on the OSHA Inflation Impact Assessment, prepared for the OSHA proposed regulation of November 5, 1976, and on the OSHA/CG joint rulemaking record wherein the diving industry including individual employers, and professional economists and statisticians including the Council on Wage and Price Stability, presented public comment. The OSHA Inflation Impact Assessment included among other things an analysis of an expensive annual physical, automatic depth recording, diving paramedics, oxygen analyzers for decompression chambers, and statistical analysis; items that were not supported by the joint OSHA/CG hearing record and are not a part of this proposal. The Coast Guard analysis takes the preceding into account.

Additionally, this proposed regulation does not cover all domestic commercial diving operations but only those maritime commercial diving operations that are under Coast Guard jurisdiction. The majority of the commercial diving operations under Coast Guard jurisdiction are large, deep-sea diving operations taking place in the Gulf Coast, the North Sea, the Persian Gulf, and elsewhere in the world. These commercial diving operations already routinely use the procedures and more costly equipment required for deep-sea operations by this proposed regulation. The smaller and inland diving operations under Coast Guard jurisdiction are normally carried out in a safe manner using procedures and equipment within the limitations proposed by these regulations.

For these reasons, the Coast Guard has determined that this proposed regulation has minimal economic impact.

The major benefits of the proposal will be the establishment of uniform safety standards for all commercial diving operations from vessels and facilities under Coast Guard jurisdiction and a reduction in diving related fatalities and accidents. The establishment of a comprehensive set of commercial diving regulations for all vessels under Coast Guard jurisdiction including mobile offshore drilling units will further U.S. efforts at the Inter-Governmental Maritime Consultative Organization (IMCO), where the United States is a leading nation in the development of an international code for commercial diving operations. It will also facilitate the employment of U.S. diving units on a worldwide basis, inasmuch as the coastal nations concerned can be assured that the U.S. diving systems meet established marine occupational safety and health standards.

In consideration of the foregoing, it is proposed that Title 46 of the Code of Federal Regulations be amended as follows:

PART 54—PRESSURE VESSELS

1. By amending Part 54 by adding § 54.01–17 to read as follows:

§ 54.01–17 Pressure vessel for human occupancy (PVHO).

Pressure vessels for human occupancy (PVHO's) must meet the requirements of Subchapter V (Marine Occupational Safety and Health Standards), Subpart B (Commercial Diving Operations) of this chapter.

2. And by adding a new Subchapter V, consisting at this time of Part 197, Subpart B, to Chapter I to read as follows:

SUBCHAPTER V—MARINE OCCUPATIONAL SAFETY AND HEALTH STANDARDS

PART 197—GENERAL PROVISIONS

Subpart A—[Reserved]

Subpart B—Commercial Diving Operations

GENERAL

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GENERAL

§ 197.200 Purpose of subpart.

This subpart prescribes rules for the design and construction of equipment, and required equipment, inspection, operation, and safety and health standards for commercial diving operations taking place from vessels and facilities under Coast Guard jurisdiction.

§ 197.202 Applicability.

(a) This subpart applies to commercial diving operations taking place at any deepwater port and the safety zone thereof as defined in 33 CFR 150; from any artificial island and fixed structure on the outer continental shelf and the waters adjacent thereto as dened in 33 CFR 147; and from all vessels required to be certificated by the Coast Guard including mobile offshore drilling units, regardless of their geographic location; except that this subpart does not apply to any diving operation:

(1) Performed solely for marine scientific research and development purposes by educational institutions;

(2) Performed solely for research and development for the advancement of diving equipment and technology; or

(3) Performed solely for search and rescue or related public safety purposes by or under the control of a governmental agency.

(b) Diving operations may deviate from the requirements of this subpart to the extent necessary to prevent or minimize a situation which is likely to cause death, injury, or major environmental damage. The circumstances leading to the situation, the deviations made, and the corrective action taken, if appropriate, to reduce the possibility of recurrence shall be recorded.

§ 197.204 Definitions.

As used in this subpart:

"ACFM" means actual cubic feet per minute.

"ANSI Code" means the B31.1 American National Standards Institute "Code for Pressure Piping, Power Piping".

"ASME Code" means the American Society of Mechanical Engineers "Boiler and Pressure Vessel Code".

"ATA" means a measure of pressure expressed in terms of atmospheres absolute (includes baromeric pressure).

"Bell" means a compartment either at ambient pressure (open bell) or pressurized (closed bell) that allows the diver to be transported to and from the underwater work site, allows the diver access to the surrounding environment, and is capable of being used as a refuge during diving operations.

"Bottom time" means the total elapsed time measured in minutes from the time the diver leaves the surface in descent to the time to the next whole minute that the diver begins ascent.

"Breathing gas/breathing mixture" means the mixed-gas, oxygen, or air as appropriate supplied to the diver for breathing.

"Bursting pressure" means the pressure at which a pressure containment device would fail structurally.

"Commercial diver" means a diver engaged in underwater work for hire excluding sport and recreational diving and the instruction thereof.

"Commercial diving operation" means all activities in support of a commercial diver.

"Cylinder" means a pressure vessel for the storage of gases under pressure.

"Decompression chamber" means a pressure vessel for human occupancy such as a surface decompression chamber, closed bell, or deep diving system especially equipped to recompress, decompress, and treat divers.

"Decompression sickness" means a condition caused by the formation of gas or gas bubbles in the blood or body tissues as a result of pressure reduction.

"Decompression stage" means a suspended platform constructed to carry out one or more divers and used for putting divers into the water and bringing them to the surface when in-water decompression or a heavyweight diving outfit is used.

"Decompression table" means a profile or set of profiles of ascent rates and breathing mixtures designed to reduce the pressure on a diver safely to atmosphere pressure after the diver has been exposed to a specific depth and bottom time.

"Depth" means the maximum pressure expressed in feet of seawater attained by a diver and is used to express the depth of a dive.

"Dive location" means that portion of a vessel or facility from which a diving operation is conducted.

"Dive team" means the divers and diver support personnel involved in a diving operation, including the diving supervisor.

"Diver" means a person working beneath the surface, exposed to hyperbaric conditions, and using underwater breathing apparatus.

"Diver-carried reserve breathing gas" means a supply of air or mixed-gas as appropriate carried by the diver in addition to the primary or secondary breathing gas supplied to the diver.

"Diving mode" means a type of diving requiring SCUBA, surface-supplied air, or surface-supplied mixed-gas equipment, with related procedures and techniques.

"Facility" means a Deepwater Port or any vessel connected with the Deepwater Port within the safety zone, or an artificial island or a fixed structure on the Outer Continental Shelf subject to Coast Guard jurisdiction.

"Fsw" means feet of seawater (or equivalent static pressure head).

"Gas embolism" means a condition caused by expanding gases, which have been taken into and retained in the lungs while breathing under pressure, being forced into the bloodstream or other tissues during ascent or decompression.

"Heavy-weight diving outfit" means diver-worn surface-supplied deep-sea dress.

"Hyperbaric conditions" means pressure conditions in excess of surface atmosphere pressure.

"Liveboating" means the support of a surfaced-supplied diver from a vessel underway.

"Maximum working pressure" means the maximum pressure to which a pressure containment device can be exposed under operating conditions (usually the pressure setting of the pressure relief device).

"No-decompression limits" means the air depth and bottom time limits of Appendix A.

"Psi(g)" means pounds per square inch (gage).

"PVHO" means pressure vessel for human occupancy.

"Saturation diving" means saturating a diver's tissues with the inert gas in the breathing mixture to allow an extension of bottom time without additional decompression.

"SCUBA diving" means a diving mode in which the diver is supplied with a compressed breathing mixture from diver carried equipment.

"Standby diver" means a diver at the dive location available to assist a diver in the water.

"Surface-supplied air diving" means a diving mode in which the diver is supplied from the dive location or bell with compressed breathing air including oxygen or oxygen enriched air if supplied for treatment.

"Surface-supplied mixed-gas diving" means a diving mode in which the diver is supplied from the dive location or bell with a compressed breathing mixture other than air.

"Timekeeping device" means a device for measuring the time of the dive in minutes.

"Treatment table" means a depth, time, and breathing gas profile designed to treat a diver for decompression sickness.

"Umbilical" means the hose bundle between a dive location and a diver or bell, or between a diver and a bell, that supplies the diver or bell with a lifeline, breathing gas, communications, power, and heat as appropriate to the diving mode or conditions.

"Vessel" means any waterborne craft including mobile offshore drilling units required to be certificated by the Coast Guard.

"Volume tank" means a pressure vessel connected to the outlet of a compressor and used as an air reservoir.

"Working pressure" means the pressure to which a pressure containment device is exposed under normal operating conditions.

§ 197.206 Substitutes for required equipment, materials, apparatus, arrangements, procedures, or tests.

(a) The Coast Guard may accept substitutes for equipment, materials, apparatus, arrangements, procedures, or tests required in this Subpart if the substitute provides an equivalent level of safety.

(b) In any case where it is shown to the satisfaction of the Commandant that the use of any particular equipment, material, apparatus, arrangement, procedure, or test is unreasonable or impracticable, the Commandant may permit the use of alternate equipment, material, apparatus, arrangement, procedure, or test to such an extent and upon such condition as will ensure, to his satisfaction, a degree of safety consistent with the minimum standards set forth in this subpart.

§ 197.208 Designation of person-in-charge.

(a) The owner or his agent of a vessel or facility without a designated master shall designate in writing an individual to be person-in-charge of the vessel or facility.

(b) Where a master is designated, he is the person-in-charge.

EQUIPMENT

§ 197.300 Applicability.

(a) Each vessel or facility subject to this subpart conducting commercial diving operations must—

(1) meet the requirements of this subpart;

(2) have all repairs and modifications to pressure vessels made in accordance with the requirements of Section VIII Division 1 or Division 2 of the ASME Code; and

(3) have all repairs and modifications to pressure piping made in accordance with the requirements of the ANSI Code.

(b) This subpart does not amend or supersede the requirements for design, plan approval, construction, certification, and inspections contained in other parts of Titles 33 and 46 of the Code of Federal Regulations and required of those vessels or facilities subject to this subpart conducting commercial diving operations and having an installed diving system.

§ 197.310 Air compressor system.

A compressor used to supply breathing air to a diver must have—

(a) a volume tank that is—

(1) built and stamped in accordance with Section VIII Division 1 of the ASME Code with—

(i) a check valve on the inlet side;

(ii) a pressure gage;

(iii) a relief valve; and

(iv) a drain valve; and

(2) tested after every repair, modification, or alteration to the pressure boundaries as set forth in § 197.462;

(b) intakes that are located away from areas containing exhaust fumes of internal combustion engines or other hazardous contaminants;

(c) an efficient filtration system; and

(d) slow-opening shut-off valves when the system operating pressure exceeds 500 psig.

§ 197.312 Breathing supply hoses.

(a) Each breathing supply hose must—

(1) have a maximum working pressure that is equal to or exceeds—

(i) the maximum working pressure of the section of the breathing supply system in which used; and

(ii) the pressure equivalent of the maximum depth of the dive relative to the supply source plus 100 psig;

(2) have a bursting pressure of 4 times its maximum working pressure;

(3) be made of kink-resistant materials; and

(4) have connectors that—

(i) are made of corrosion-resistant material;

(ii) are resistant to accidental disengagement; and

(iii) have a maximum working pressure that is at least equal to the maximum working pressure of the hose to which they are attached.

(b) Umbilicals must—

(1) meet the requirements of (a) of this section; and

(2) be marked from the diver or open bell end in 10 feet intervals to 100 feet and in 50 feet intervals thereafter.

§ 197.314 First aid and treatment equipment.

(a) Each dive location must have—

(1) a medical kit approved by a physician;

(2) a copy of an American Red Cross standard first aid handbook;

(3) a bag-type manual resuscitator with transparent mask and tubing;

(4) a capability to remove an injured diver from the water; and

(5) a two-way communications system to obtain emergency assistance.

(b) Each dive location supporting mixed-gas dives, dives deeper than 130 fsw, or dives outside the no-decompression limits must meet the requirements of (a) of this section and have—

(1) a decompression chamber;

(2) treatment tables;

(3) a supply of breathing gases sufficient for treatment;

(4) a medical kit that—

(i) can be carried into the decompression chamber; and

(ii) is suitable for use under hyperbaric conditions; and

(5) a means to place an injured diver into the decompression chamber.

§ 197.316 Liveboating safety device.

During liveboating operations a means must be used to prevent the diver's hose from entangling in the propeller of the vessel.

§ 197.318 Gages and timekeeping devices.

(a) A gage indicating diver depth must be at each dive location for surface-supplied dives.

(b) A timekeeping device must be at each dive location.

§ 197.320 Diving ladder and stage.

(a) Each diving ladder must—

(1) be made of corrosion-resistant material;

(2) be capable of supporting the weight of at least two divers;

(3) extend one meter below the water surface;

(4) be firmly in place; and

(5) be available at the dive location for a diver to enter or exit the water unless a diving stage or bell is provided.

(b) Each diving stage must—

(1) be made of corrosion-resistant material;

(2) be capable of supporting the weight of at least two divers;

(3) have an open-grating platform; and

(4) be available for a diver to enter and exit the water from the dive location if the diver is—

(i) wearing a heavy-weight diving outfit; or

(ii) diving outside the no-decompression limits, except when a bell is provided.

§ 197.322 Surface-supplied helmets and masks.

(a) Each surface-supplied helmet or mask must have—

(1) a non-return valve at the attachment point between helmet or mask and umbilical that closes readily and positively;

(2) an exhaust valve; and

(3) a two-way voice communication system between the diver and the dive location or bell.

(b) Each surface-supplied air helment or mask must—

(1) ventilate at least 4.5 ACFM at any depth that it is operated; or

(2) be able to maintain the diver's inspired carbon dioxide partial pressure below 0.02 ATA when the diver is producing carbon dioxide at the rate of 1.6 standard liters per minute.

§ 197.324 Diver's safety harness.

Each safety harness used in surface-supplied diving must have—

(a) a positive buckling device; and

(b) an attachment point for the umbilical life line that—

(1) distributes the pulling force of the unmbilical over the diver's body; and

(2) prevents strain on the mask or helmet.

§ 197.326 Oxygen safety.

(a) Equipment used with oxygen or oxygen mixtures greater than 40 percent by volume must be designed for such use.

(b) Oxygen systems with pressures greater than 125 psig must have slow-opening shut-off valves.

§ 197.328 PVHO—General.

(a) Each PVHO subject to an internal pressure over 15 psig contracted for or purchased after April 15, 1978 must—

(1) be built and stamped in accordance with Section VII Division 1 or Division 2, and PVHO–1 of the ASME Code; and

(2) meet the requirements of this section.

(b) Each PVHO, subject to an internal pressure over 15 psig contracted for or constructed before April 15, 1978 and not Coast Guard approved, must be submitted to the Coast Guard for approval prior to April 15, 1983. To be approved, a PVHO must be constructed in accordance with Part 54 of this chapter, or—

(1) be built in accordance with Section VIII Division 1 or Division 2 of the ASME Code; and—

(i) have the plans approved in accordance with § 54.01–18 of this chapter; and

(ii) pass the radiographic and other survey tests of welded joints required by Section VIII Division 1 or Division 2, as appropriate, of the ASME Code or equivalent; and

(iii) pass the hydrostatic test described in § 54.10–10 of this chapter; or

(iv) pass the pneumatic test described in § 54.10–15 of this chapter and pass such additional tests as the ICMI may require; and

(2) meet the requirements of this section.

(c) Each PVHO must—

(1) have a shut-off valve located within one foot of the pressure boundary on all piping penetrating the pressure boundary;

(2) have a check valve located within one foot of the pressure boundary on all piping carrying fluids into the PVHO;

(3) Have the pressure relief device required by PVHO–1 of Section VIII of the ASME Code, except when the only source of pressure in the PVHO is from an external source, a pressure relief device installed in each exterior pipe, capable of supplying pressure to the PVHO, located outboard of the valves required in paragraphs (c)(1) and (c)(2) of this section may be substituted;

(4) have a pressure sealing hatch;

(5) have a built-in breathing system with a minimum of one mask per occupant stored inside;

(6) have a two-way voice communieations system allowing communications between an occupant in a pressurized compartment of the PVHO and—

(i) the dive location;

(ii) any divers being supported from the PVHO; and

(iii) occupants of other separately pressurized compartments;

(7) if designed to couple to another PVHO, have a two-way communications system allowing communications between occupants of each PVHO when coupled;

(8) have a pressure gage in the interior of each compartment designed for human occupancy;

(9) have at least one viewport that allows observation of any occupant from the outside and if acrylic meets the requirements of PVHO–1 of the ASME Code;

(10) have an installed means of illumination sufficient to allow—

(i) the reading of gages by an occupant; and

(ii) the operation of the installed systems within each compartment;

(11) be designed and equipped to minimize sources of combustible materials and ignition;

(12) have a protective device on the inlet side of PVHO exhaust lines;

(13) have a fire extinguisher using water as the extinguishing medium and, if pressurized, the water shall be propelled by compressed air, nitrogen, helium, or other substance that is non-toxic to the occupants of the PVHO;

(14) have a means of maintaining the interior atmosphere below 25 percent surface equivalent oxygen by volume when pressurized with air as the breathing mixture;

(15) have a means of maintaining the interior atmosphere below 2 percent surface equivalent carbon dioxide by volume;

(16) have a means of over-riding and controlling from the exterior all interior breathing and pressure supply controls;

(17) have a speech unscrambler when used with mixed-gas;

(18) be tested after every repair, modification, or alteration to the pressure boundaries as set forth in § 197.462; and

(19) have interior electrical equipment that is explosion-proof.

§ 197.330 PVHO—Closed bells.

(a) Except as provided in paragraph (b) of this section, each closed bell must meet the requirements of § 197.328 and—

(1) have underwater breathing apparatus stored inside for each occupant;

(2) have an umbilical;

(3) have lifting equipment capable of returning the occupied closed bell to the dive location when fully flooded;

(4) be capable of recompressing on the surface to the maximum design diving depth;

(5) be constructed and equipped as required by § 197.332;

(6) have a breathing gas supply, independent of the surface supply, sufficient to support the intact closed bell and the occupants for twelve hours after an accident severing the umbilical to the surface; and

(7) have an emergency locating device designed to assist personnel on the surface in acquiring and maintaining contact with the submerged PVHO if the umbilical to the surface is severed.

(b) A closed bell that does not meet the requirements of paragraphs (a)(3), (a)(4), and (a)(5) of this section, must be capable of attachment to another PVHO that—

(1) allows the transfer of personnel and diver's equipment under pressure from the closed bell to the PVHO;

(2) meets the requirements of paragraph (a)(3) of this section;

(3) is capable of attachment to a decompression chamber meeting the requirements of paragraphs (a)(4) and (a)(5) of this section; and

(4) allows the transfer of personnel and diver's equipment under pressure from the PVHO to the decompresion chamber.

§ 197.332 PVHO — Decompression chambers.

(a) Each decompression chamber must—

(1) meet the requirements of § 197.328;

(2) have internal dimensions sufficient to accommodate a diver lying in a horizontal position and another person tending the diver;

(3) have a capability for ingress and egress of personnel and equipment while the occupants are under pressure;

(4) have a means of operating all installed man-way locking devices from both sides of a closed hatch;

(5) have a general interior illumination level of at least 25 foot candles with

50 foot candles over bunks and in work areas;

(6) have one bunk for every two occupants;

(7) have a capability that allows bunks to be seen over their entire lengths from the exterior;

(8) have a minimum pressure capability of—

(i) 6 ATA, when used for diving to 300 fsw; or

(ii) the maximum depth of the dive, when used for diving operations deeper than 300 fsw, unless a closed bell meeting the requirements of § 197.330 (a) (3), (4), and (5) is used;

(9) have a minimum pressurization rate of 2 ATA per minute to 60 fsw at least 1 ATA thereafter;

(10) have a decompression rate of 1 ATA per minute to 33 fsw;

(11) have an external pressure gage for each pressurized compartment;

(12) have a capability to supply breathing mixtures at the maximum rate required by each occupant doing heavy work; and

(13) have a sound-powered headset as a backup to the communications system.

§ 197.334 Open diving bells.

(a) Each open diving bell must—

(1) be made of corrosion-resistant material;

(2) have an upper section that provides a gas-tight boundary with an open bottom;

(3) have lifting equipment capable of returning the occupied open bell to the dive location; and

(4) heave an umbilical.

§ 197.336 Pressure piping.

Piping systems not an integral part of the vessel or facility, carrying fluids under pressures exceeding 15 psig must—

(a) meet the ANSI Code;

(b) have the point of connection to the integral piping system of the vessel or facility clearly marked; and

(c) be tested after every repair, modification, or alteration to the pressure boundaries as set forth in § 197.462.

§ 197.338 Compressed gas cylinders.

Compressed gas cylinders must—

(a) meet the requirements of 49 CFR 173.34 and 49 CFR 178 Subpart C;

(b) be stored in a ventilated area;

(c) be protected from excessive heat;

(d) be prevented from falling; and

(e) be tested after any repair, modification, or alteration to the pressure boundaries as set forth in § 197.462.

§ 197.340 Breathing gas supply.

(a) A primary breathing gas supply for surface-supplied diving must be sufficient to support for the duration of the planned dive—

(1) the diver;

(2) the standby diver;

(3) the decompression chamber, when required by § 197.432(e) or by § 197.434 (a), and for one hour after completion of the planned dive;

(4) a decompression chamber when provided;

(5) a closed bell when provided or required by § 197.434(c); and

(6) an open bell when provided or required by § 197.432(e) or by § 197.434(b).

(b) A secondary breathing gas supply for surface-supplied diving must be sufficient to support—

(1) the diver while returning to the surface;

(2) the diver during decompression;

(3) the standby diver;

(4) the decompression chamber when required by § 197.432(e) or § 197.434(a) for the duration of the dive and one hour after the completion of the planned dive;

(5) the closed bell while returning the diver to the surface; and

(6) the open bell while returning the diver to the surface.

(c) A diver-carried reserve breathing gas supply for surface-supplied diving must be sufficient to allow the diver to—

(1) reach the surface;

(2) reach another source of breathing gas; or

(3) be reached by a standby diver equipped with another source of breathing gas for the diver.

(d) A primary breathing gas supply for SCUBA diving must be sufficient to support the diver for the duration of the planned dive through his return to the dive location or planned pick-up point.

(e) A diver-carried reserve breathing gas supply for SCUBA diving must be sufficient to allow the diver to return to the dive location or planned pick-up point from the greatest depth of the planned dive.

(f) Oxygen used for breathing mixtures must—

(1) meet the requirements of Federal Specification BB–O–925a; and

(2) be Type 1 (gaseous) Grade A or B.

(g) Nitrogen used for breathing mixtures must—

(1) meet the requirements of Federal Specification BB–N–411c;

(2) be Type 1 (gaseous);

(3) be Class 1 (oil free); and

(4) be Grade A, B, or C.

(h) Helium used for breathing mixtures must be Grades A, B, or C produced by the federal government, or equivalent.

(i) Compressed air used for breathing mixtures must—

(1) be 20 to 22 percent oxygen by volume;

(2) have no objectionable odor; and

(3) have no more than—

(i) 1000 parts per million of carbon dioxide;

(ii) 20 parts per million carbon monoxide;

(iii) 5 milligrams per cubic meter of solid and liquid particulates including oil; and

(iv) 25 parts per million of hydrocarbons (includes methane and all other hydrocarbons expressed as methane).

§ 197.342 Buoyancy-changing devices.

(a) A dry suit or other buoyancy-changing device not directly connected to the exhaust valve of the helmet or mask must have an independent exhaust valve.

(b) When used for SCUBA diving, a buoyancy changing device must have an inflation source separate from the breathing gas supply.

§ 197.344 Inflatable flotation devices.

(a) An inflatable flotation device for SCUBA diving must—

(1) be capable of maintaining the diver at the surface in a face-up position;

(2) have a manually activated inflation device;

(3) have an oral inflation device;

(4) have an over-pressure relief device;

(5) have a manually operated exhaust valve.

§ 197.346 Diver's equipment.

(a) Each diver using SCUBA must have—

(1) self-contained underwater breathing equipment including—

(i) a primary breathing gas supply with a cylinder pressure gage readable by the diver during the dive; and

(ii) a driver-carried reserve breathing gas supply provided by—

(A) a manual reserve (J valve); or

(B) an independent reserve cylinder connected and ready for use;

(2) a face mask;

(3) an inflatable flotation device;

(4) a weight belt capable of quick release;

(5) a knife;

(6) Swim fins or shoes;

(7) a diving wristwatch; and

(8) a depth gage.

(b) Each diver using a heavy-weight diving outfit must have—

(1) a helmet group consisting of helmet, breastplate, and associated valves and connections;

(2) a diving dress group consisting of a basic dress that encloses the body (except for head and hands) in a tough, waterproof cover, helmet cushion, gloves, weighted shoes, weight assembly, and knife; and

(3) a hose group consisting of the breathing gas hose and fittings, the control valve, the life-line, communications cable, and a pneumofathometer.

(c) Each diver using a light-weight diving outfit must have—

(1) a safety harness;

(2) weight assembly capable of quick release;

(3) a mask group consisting of a light-weight mask and associated valves and connections;

(4) a diving dress group consisting of wet or dry diving dress, gloves, shoes or fins, and knife; and

(5) a hose group consisting of the breathing gas hose and fittings, the control valve, the life-line, communications cable, and a pneumofathometer.

(d) Each surface-supplied air dive operation within the no-decompression limits and to depths of 130 fsw or less must have a primary breathing gas supply at the dive location.

(e) Each surface-supplied dive operation outside the no-decompression limits,

deeper than 130 fsw, or using mixed-gas as a breathing mixture must have at the dive location—

(1) a primary breathing gas supply; and

(2) a secondary breathing gas supply.

(f) Each diver diving outside the no-decompression limits, deeper than 130 fsw, or using mixed-gas must have a diver-carried reserve breathing gas supply except when using a heavy-weight diving outfit or when diving in a physically confining space.

OPERATIONS

§ 197.400 Applicability.

Diving operations may not be conducted from a vessel or facility subject to this subpart unless the regulations in this subpart are met.

§ 197.402 Responsibilities of the person-in-charge.

The person-in-charge shall be fully cognizant of the provisions of this subpart and the operations manual required by § 197.420.

§ 197.410 Dive procedures.

The person-in-charge shall ensure that:

(a) Before commencing diving operations dive team members are briefed on—

(1) the tasks to be undertaken;

(2) any unusual hazards or environmental conditions likely to affect the safety of the diving operation; and

(3) any modifications to the operations manual or procedures including safety procedures necessitated by the specific diving operation.

(b) The breathing gas supply systems, masks, helmets, thermal protection when provided, and bell lifting equipment when a bell is provided or required are inspected prior to each diving operation.

(c) Each diver is instructed to report any physical problems or physiological effects including aches, pains, current illnesses, or symptoms of decompression sickness prior to each dive.

(d) A depth, bottom time profile, including any breathing mixture changes, is maintained at the dive location for each diver during the dive except that SCUBA divers shall maintain their own profiles.

(e) A two-way voice communication system is used between—

(1) each surface-supplied diver and a dive team member at the dive location or bell (when provided); and

(2) the bell (when provided) and the dive location.

(f) A two-way communication system is available at the dive location to obtain emergency assistance.

(g) The working interval of a dive is terminated when—

(1) he so directs;

(2) a diver requests termination;

(3) a diver fails to respond correctly to communications or signals from a dive team member;

(4) communications are lost and can not be quickly re-established between—

(i) the diver and a dive team member at the dive location; and

(ii) the person-in-charge and the person controlling the vessel in liveboating operations; or

(5) a diver begins to use his diver-carried reserve breathing gas supply.

(h) After the completion of each dive—

(1) the physical condition of the diver is checked;

(2) the diver is instructed to report any physical problems or adverse physiological effects including aches, pains, current illnesses, or symptoms of decompression sickness or gas embolism;

(3) the diver is advised of the location of an operational decompression chamber; and

(4) the diver is alerted to the potential hazards of flying after diving.

(i) For any dive outside the no-decompression limits, deeper than 130 fsw, or using mixed-gas as a breathing mixture—

(1) a depth, time, decompression profile including breathing mixture changes is maintained for each diver at the dive location;

(2) the diver is instructed to remain awake and in the vicinity of the dive location decompression chamber for at least one hour after the completion of a dive, decompression, or treatment; and

(3) a dive team member, other than the diver, is trained and available to operate the decompression chamber.

(j) A report is completed when decompression sickness or gas embolism is suspected or symptoms are evident containing—

(1) the investigation for each incident including—

(i) the dive and decompression profiles;

(ii) the composition, depth, and time of breathing mixture changes;

(iii) a description of the symptoms including depth and time of onset; and

(iv) a description and results of the treatment;

(2) the evaluation for each incident based on—

(i) the investigation;

(ii) consideration of the past performance of the decompression table used; and

(iii) individual susceptibility; and

(3) the corrective action taken, if necessary, to reduce the probability of recurrence.

§ 197.420 Operations manual.

(a) An operations manual must be prepared for each vessel or facility from which diving operations are conducted.

(b) The operations manual must—

(1) be in accordance with the requirements of this subpart; and

(2) provide for the safety and health of the divers.

(c) The operations manual must contain the—

(1) safety procedures and checklists for each diving mode used;

(2) dive team member assignments and responsibilities for each diving mode used;

(3) equipment procedures and checklists for each diving mode used;

(4) emergency procedures for—

(i) fire;

(ii) equipment failure;

(iii) adverse environmental conditions;

(iv) medical illness; and

(v) treatment of injury; and

(5) procedures dealing with the use of—

(i) hand-held power tools;

(ii) welding and burning equipment; and

(iii) explosives.

SPECIFIC DIVING MODE PROCEDURES

§ 197.430 SCUBA diving.

The person-in-charge shall ensure that:

(a) SCUBA diving is not conducted—

(1) outside the no-decompression limits;

(2) in depths greater than 130 fsw;

(3) against currents greater than one (1) knot unless line-tended; and

(4) where a diver can not directly ascend to the surface unless line-tended.

(b) The SCUBA diver has the equipment required by § 197.346(a).

(c) A standby diver is available while a diver is in the water.

(d) A diver is line-tended from the surface, or accompanied by another diver in the water in continuous visual contact during the diving operation.

(e) A diver is stationed at the underwater point of entry and is line-tending the diver in a physically confining space.

(f) A boat is available for diver pick-up when the divers are not line-tended from the surface.

§ 197.432 Surface-supplied air diving.

The person-in-charge shall ensure that:

(a) Surface-supplied air diving is conducted in depths less than 190 fsw, except that dives with bottom times of 30 minutes or less may be conducted to depths of 220 fsw.

(b) Each diving operation has a primary breathing gas supply.

(c) Each diver is continuously tended while in the water.

(d) A diver is stationed at the underwater point of entry and is line-tending the diver in a physically confining space.

(e) For dives deeper than 130 fsw or outside the no-decompression limits—

(1) each diving operation has a secondary breathing gas supply;

(2) a decompression chamber is ready for use at the dive location;

(3) a bell is used for dives with an in-water decompression time greater than 120 minutes, except when the diver is using a heavy-weight diving outfit or is diving in a physically confining space;

(4) a separate dive team member tends each diver in the water;

(5) a standby diver is available while a diver is in the water;

(6) an extra breathing gas hose capable of supplying breathing gas to the diver with attaching tools is available to the standby diver; and

(7) each diver has a diver-carried reserve breathing gas supply except when using a heavy-weight diving outfit or when diving in a physically confining space.

(f) The surface-supplied air diver has the equipment required by 46 CFR 197.346(b) or (c).

§ 197.434 Surface supplied mixed-gas diving.

The person-in-charge shall ensure that:

(a) When mixed-gas diving is conducted a decompression chamber or a closed bell meeting the requirements of § 197.332 is ready for use at the dive location.

(b) A bell is used for dives deeper than 220 fsw or when the dive involves in-water decompression times greater than 120 minutes, except when the diver is using a heavy-weight diving outfit or is diving in a physically confining space.

(c) A closed bell is used for dives at depths greater than 300 fsw, except when diving is conducted in a physically confining space.

(d) A separate dive team member tends each diver in the water.

(e) A standaby diver is available during all non-saturation dives.

(f) When saturation diving is conducted, a standby diver is available—

(1) when the closed bell leaves the dive location and for one hour after; and

(2) when the closed bell returns to the dive location and one hour preceding return.

(g) When closed bell operations are conducted, a diver is available in the closed bell to assist a diver in the water.

(h) A diver is stationed at the underwater point of entry when diving in a physically confining space.

(i) Each diving operation has a primary and secondary breathing gas supply meeting the requirements of § 197.340.

(j) The surface-supplied mixed-gas diver has the equipment required by § 197.346(a), (b), or (c).

§ 197.436 Liveboating.

The person-in-charge liveboating operations shall ensure that:

(a) Diving is not conducted in depths greater than 200 fsw.

(b) Divising is not conducted in seas that impede diver mobility or work function.

(c) Liveboating operations are not conducted at night.

(d) Each diver carries a reserve breathing gas supply.

(e) In addition to the requirements of § 197.316, the propeller of the vessel is stopped before the diver enters or exits the water.

(f) A standby diver is available while a diver is in the water.

(g) Diving is not conducted with in-water decompression times greater than 120 minutes.

(h) A boat is available for diver pickup if the umbilical is severed.

PERIODIC TESTS AND INSPECTIONS OF DIVING EQUIPMENT

§ 197.450 Breathing gas tests.

The person-in-charge shall ensure that:

(a) The output of an air compressor is tested and meets the requirements of § 197.340 for quality and quantity every six months and after every repair or modification by means of samples taken at the connection point to the distribution system.

(b) Breathing mixtures supplied to a diver are tested and meet the requirements of § 197.340 for quality every six months by means of samples taken at the umbilical or underwater breathing apparatus connection point at the diver.

§ 197.452 Oxygen cleaning.

The person-in-charge shall ensure that equipment used with oxygen or oxygen mixtures greater than 40 percent by volume is cleaned of flammable materials before being placed into service and after any repair, alteration, modification, or suspected contamination.

§ 197.454 First aid and treatment equipment.

The person-in-charge shall ensure that medical kits are checked monthly to ensure that all required supplies are present.

§ 197.456 Breathing supply hoses.

The person-in-charge shall ensure that:

(a) Each breathing supply hose is pressure tested initially and every twenty-four months thereafter to 1.5 times its maximum working pressure.

(b) Each breathing supply hose assembly, prior to being placed into initial service and after any repair, modification, or alteration, is tensile tested by—

(1) subjecting each hose-to-fitting connection to a 200 pound axial load; and

(2) passing a visual examination for evidence of separation, slippage, or other damage to the assembly.

(c) Each breathing supply hose must be inspected before each diving operation for—

(1) cuts;

(2) kinks;

(3) soft spots; or

(4) bubbles.

(d) Each breathing supply hose must have open ends taped, capped or plugged, when not in use.

§ 197.458 Gages and timekeeping devices.

The person-in-charge shall ensure that:

(a) Each depth gage and timekeeping device is tested or calculated against a master reference gage or timekeeping device—

(1) every six months;

(2) when a discrepancy exists in a depth gage reading greater than 2 percent of full scale between any two equivalent gages; and

(3) when a discrepancy exists in a timekeeping device reading greater than one quarter of a minute between any two equivalent timekeeping devices.

(b) Each depth gage and timekeeping device is inspected before commencing diving operations.

§ 197.460 Diving equipment.

The person-in-charge shall ensure that the diving equipment designated for use in a dive under § 197.346 is inspected before each dive.

§ 197.462 Pressure vessels and pressure piping.

The person-in-charge shall ensure that:

(a) Each volume tank, cylinder, PVHO, and pressure piping system has been examined and tested every twelve months and after any repair, modification, or alteration to the extent necessary to determine that they are in condition and fit for the service intended.

(b) The following tests to meet the requirements of (a) of this section have been conducted—

(1) an internal and external visual examination for mechanical damage or deterioration;

(2) an annual pneumatic test;

(3) a hydrostatic test every fifth year and after any repair, modification, or alteration; and

(4) a leak test.

(c) In conducting the pneumatic test on pressure vessels—

(1) the test pressure must be the pressure stamped on the pressure vessel; and

(2) the test shall be conducted only after having taken suitable precautions to protect personnel and equipment.

(d) In conducting the pneumatic test on pressure piping—

(1) the test pressure must be no less than 90 percent of the setting of the relief device; and

(2) the test shall be conducted after having taken suitable precautions to protect personnel and equipment.

(e) In conducting a hydrostatic test on a pressure vessel, the test pressure shall be—

(1) 1¼ times the pressure stamped on the pressure vessel built to Division 2 of the ASME Code; and

(2) 1½ times the pressure stamped on the pressure vessel built to Division 1 of the ASME Code.

(f) The leak test must be conducted with the breathing mixture normally used in service.

RECORDS

§ 197.480 Logbook.

(a) The person-in-charge of a vessel or facility required by 46 U.S.C. 201 to have an official logbook shall maintain the logbook on Form CG–706.

(b) The person-in-charge of a vessel of facility not required by 46 U.S.C. 201 to have an official logbook, shall maintain, on board, an unofficial logbook for making the entries required by this subpart.

§ 197.482 Logbook entries.

The person-in-charge shall ensure that the following information is recorded in the logbook required by this subpart:

(a) For each diving operation the—

(1) date, time, and location at the start of dive operations;

(2) approximate underwater and surface conditions (weather, visibility, temperatures and currents);

(3) Names of dive team members including diving supervisor;

(4) repetitive dive designation or elapsed time since last hyperbaric exposure if less than twenty-four hours for each diver;

(5) diving modes used;

(6) maximum depth and bottom time for each diver;

(7) general nature of work performed; and

(b) For each dviing operation deviating from the requirements of this subpart—

(1) a description of the circumstances leading to the situation;

(2) the deviations made; and

(3) the corrective action taken, if appropriate, to reduce the possibility of recurrence.

(c) For each dive outside the no-decompression limits, deeper than 130 fsw, or using mixed-gas, in addition to the requirements of (a) of this section, the breathing gases and decompression table designations used.

(d) When decompression sickness or gas embolism is suspected or symptoms are evident, in addition to the requirements of (a) and (b) of this section—

(1) the name of the diver; and

(2) a description and results of treatment.

(e) For each fatality or any diving related injury or illness that results in incapacitation of more than 72 hours or requires any dive team member to be hospitalized for more than 24 hours—

(1) the date;

(2) time;

(3) circumstances; and

(4) extent of any injury or illness.

(f) The date and results of each check of the medical kits.

(g) The date and results of each test of the air compressor.

(h) The date and results of each test of breathing mixtures.

(i) The date, equipment cleaned, general cleaning procedure, and names of persons cleaning the diving equipment for oxygen service.

(j) The date and results of each test of the breathing supply hoses and system.

(k) The date and results of each inspection of the breathing gas supply system.

(l) The date and results of each test of depth gages and timekeeping devices.

(m) The date and results of each test and inspection of each PVHO.

(n) The date and results of each inspection of the diving equipment.

(o) The date and results of each test and inspection of pressure piping.

(p) The date and results of each test and inspection of volume tanks and cylinders.

NOTE.—R.S. 4290 (46 U.S.C. 201) requires that certain entries be made in an official logbook in addition to the entries required by this section; and R.S. 4291 (46 U.S.C. 202) prescribes the manner of making those entries.

§ 197.484 Notice of casualty.

(a) In addition to the requirements of § 4.05 of this chapter and 33 CFR 146.01–20, the person-in-charge shall notify the Officer-in-Charge, Marine Inspection, as soon as possible after a diving casualty occurs, if the casualty involves any of the following—

(1) loss of life;

(2) diving-related injury to any person causing incapacitation for more than 72 hours;

(3) diving-related injury to any person requiring hospitalization for more than 24 hours;

(b) The notice required by this section must contain the following—

(1) name and official number (if applicable) of the vessel or facility;

(2) name of the owner or agent of the vessel or facility;

(3) name of the designated person-in-charge;

(4) description of the casualty including presumed cause; and

(5) nature and extent of the injury to persons.

(c) The notice required by this section is not required to be submitted if the written report of the casualty required by § 197.486 is submitted within five days.

§ 197.486 Written report of casualty.

The person-in-charge of a vessel or facility for which a notice of casualty was made under § 197.484 shall submit a report to the Officer-in-Charge, Marine Inspection, as soon as possible after the casualty occurs, on—

(a) Form CG–924E, if the casualty involves injury to persons or loss of life, with a copy of the report required by § 197.410(j) when a cause is decompression sickness; and

(b) Form CG–2692 if the causualty involves damage to property in excess of $5000 or grounding or stranding of a vessel.

§ 197.488 Retention of records after casualty.

(a) The owner, agent, or person-in-charge of a vessel or facility for which a report of casualty is made under § 197.484 shall retain all records on board that are maintained on the vessel or facility for at least 6 months after the report of casualty is made or until advised by the Officer-in-Charge, Marine Inspection, that records need not be retained on board.

(b) The records required by (a) of this section to be retained on board include—

(1) rough and smooth vessel deck log;

(2) rough and smooth vessel engineroom log;

(3) tour reports;

(4) vessel bell books;

(5) navigation charts in use at the time of casualty;

(6) vessel navigation work books;

(7) vessel compass deviation cards;

(8) vessel gyrocompass records;

(9) storage plans;

(10) record of vessel drafts;

(11) notices to mariners;

(12) radiograms sent and received;

(13) radio log;

(14) personnel list;

(15) crane record book;

(16) vessel night order books; and

(17) all reports required by § 197.410(j).

(c) The owner, agent, or person-in-charge shall, upon request, make the records described in this section available for examination by any Coast Guard official authorized to investigate the casualty.

APPENDIX A—AIR NO-DECOMPRESSION LIMITS

The following table gives the depth versus bottom time limits for single, no-decompression, air dives made within any twelve hour period. The limit is the maximum bottom time in mnutes that a diver can spend at that depth without requiring decompression beyond that provided by a normal ascent rate of 60 fsw per minute. (Although bottom time is concluded when ascent begins, a slower ascent rate would increase the bottom time thereby requiring decompression.) An amount of nitrogen remains in the tissues of a diver after any air dive, regardless of whether the dive was a decompression or no-decompression dive. Whenever another dive is made within a twelve hour period, the nitrogen remaining in the blood and body tissues of the diver must be considered when calculating his decompression.

Air no-decompression limits

Depth (feet):	*No-decompression limits (minutes)*
35	310
40	200
50	100
60	60
70	50
80	40
90	30
100	25
110	20
120	15
130	10

SOURCE: U. S. Navy Diving Manual, 1 September 1973.

(Sec. 3, Pub. L. 84–519, 70 Stat. 152 (46 U.S.C. 390b); Sec. 4, Pub. L. 90–397, 82 Stat. 341 (46 U.S.C. 391a); Sec. 10, Pub. L. 93–627, 88 Stat. 2137 (33 U.S.C. 1509(b)); Sec. 4, Pub. L. 83–212, 67 Stat. 462 (43 U.S.C. 1333(e)(1)); Sec. 10, Pub. L. 60–152, 35 Stat. 428, as amended (46 U.S.C. 395); R.S. 4405 as amended (46 U.S.C. 375); R.S. 4417 as amended (46 U.S.C. 391); R.S. 4418 as amended (46 U.S.C. 392); R.S. 4462 as amended (46 U.S.C. 416); Sec. 6, Pub. L. 89–670, 80 Stat. 937 (49 U.S.C. 1655); 49 CFR 1.46)

NOTE.—The Coast Guard has determined that this document does not contain a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11821, as amended, and OMB Circular A–107.

Dated: November 3, 1977.

O. W. SILER,
Admiral, U.S. Coast Guard,
Commandant.

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